1.   A method for configuring a state machine implemented in a function block associated

with a process plant via a computing device having a display device and an input device, wherein

the state machine transitions between states based on state machine configuration data and one or

more state machine inputs, wherein the state machine inputs are associated with operation of the

process plant, the method comprising:

providing a graphical user interface displayed by the display device, the graphical user interface

including a plurality of graphical elements ~~defining~~, the graphical elements comprising a first

plurality of cells associated with the function block arranged in a matrix having a first dimension

and a second dimension, wherein positions along the first dimension correspond to state machine

states, and positions along the second dimension correspond to state machine inputs, such that

cells in the first plurality of cells define input/state pairs corresponding to the position of the cells

relative to the first and second dimensions;

receiving state transition data associated with one or more of the plurality of graphical elements

via the input device, the state transition data identifying one or more next states to which the

state machine transitions following conditions in the process plant corresponding to the

input/state pairs defined by ~~the~~ one or more of the ~~plurality of graphical elements~~cells of the first

plurality of cells; and

storing the state transition data on the first computer readable medium associated with the

function block.

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2. Canceled

3. (Currently Amended) A method according to claim ~~2~~1, further comprising displaying the first plurality of cells on the display device and displaying indications of the state transition data in the one or more of the first plurality of cells for which state transition data have been received.

4. (Currently Amended) A method according to claim ~~2~~1, wherein displaying the first plurality of cells on the display device comprises displaying ~~a~~ the matrix ~~comprising~~ wherein the first dimension comprises at least one row of cells and the second dimension comprises a plurality of columns of cells, ~~wherein~~ such that each of the at least one row of cells is associated with a state machine input, and ~~wherein~~ each column of cells is associated with one of the plurality of states.

5. (Currently Amended) A method according to claim 2, wherein displaying the first plurality of cells on the display device comprises displaying ~~a~~ the matrix ~~comprising~~ wherein the first dimension comprises at least one column of cells and the second dimension comprises a plurality of rows of cells ~~and at least one column of cells, wherein~~ such that each row of cells is associated with one of the plurality of states, and wherein each of the at least one column of cells is associated with a state machine input.

6. (Previously Presented) A method according to claim 2, wherein the particular value of the input is one of a logical one, a logical zero, a logical TRUE or a logical FALSE value.

7. (Previously Presented) A method according to claim 2, further comprising:

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receiving data, via the input device, indicative of a number of the state machine

inputs; and

identifying cells in the first plurality of cells based on the number of state machine

inputs.

8.   (Currently Amended) A method according to claim 7, further comprising:

receiving data, via the input device, indicative of a number of states in the

plurality of states;

wherein identifying the cells in the first plurality of cells comprises identifying

cells based on the number of inputs and the number of states.

9.   (Currently Amended) A method according to claim 2̶1̲, further

comprising:

receiving data, via the input device, indicative of a number of states in the

plurality of states; and

identifying a number of cells in the first plurality of cells based on the number of

states.

10.   (Currently Amended) A method according to claim 2̶1̲, wherein the

plurality of graphical elements further comprises a second plurality of cells associated with the

function block, wherein each cell of the second plurality of cells corresponds to a respective one

of a plurality of outputs of the function block and a respective one of the plurality of states of the

state machine;

receiving output configuration data associated with one or more cells of the

second plurality of cells via the input device, wherein respective output configuration data

associated with each of the one or more cells of the second plurality of cells includes data

indicative of an output value of the output corresponding to the cell when the state machine is in the state corresponding to the cell; and

storing the output configuration data on a second computer readable medium associated with the function block.

11. (Original) A method according to claim 10, wherein the first computer readable medium comprises the second computer readable medium.

12.   (Original) A method according to claim 1, further comprising:

receiving data indicative of how to handle inputs that have a BAD status; and

storing the data indicative of how to handle inputs that have the BAD status.

13.   (Previously Presented) A method according to claim 1, wherein the one or more state machine inputs comprises a plurality of state machine inputs, the method further comprising:

receiving data, via the graphical user interface, indicative of priorities associated with the plurality of state machine inputs; and

storing the data indicative of how to handle inputs that have a BAD status.

14.   (Previously Presented) A method according to claim 1, further comprising receiving data indicative of whether one or more, if any, one or more state machine inputs should be ignored by the state machine; and

storing the data indicative of whether one or more, if any, one or more state machine inputs should be ignored by the state machine.

15.   (Previously Presented) A method according to claim 1, wherein the one or more state machine inputs is to be associated with at least one of a process control system, a simulation of a process control system, a safety system, and a simulation of a safety system.

16. (Previously Presented) A method according to claim 1, wherein the one or more state machine inputs is to be received from at least one other function block associated with the process plant.

17. (Previously Presented) A method according to claim 1, wherein the one or more state machine inputs is to be received from an operator interface.

18. (Currently Amended) A tangible medium storing machine readable instructions comprising:

first code to provide a graphical user interface via a display device for configuring state machine transitions among a plurality of states, the graphical user interface including a plurality of graphical elements comprising a first plurality of cells associated with the function block arranged in a matrix having a first dimension and a second dimension, wherein positions along the first dimension correspond to state machine states, and positions along the second dimension correspond to state machine inputs, such that cells in the first plurality of cells define input/state pairs corresponding to the position of the cells relative to the first and second dimensions which can be used to indicate desired transitions between states;

second code to receive state transition data identifying a state machine next state associated with one of the graphical elements via the graphical user interface; and

third code to store the state transition data on a computer readable medium associated with a function block implementing a state machine in a process plant such that the state machine transitions to the next state when conditions in the process plant correspond to the input/state pair associated with the graphical element.

19. (Currently Amended) A tangible medium according to claim 18, ~~wherein the plurality of graphical elements comprises a first plurality of cells associated with the function block, wherein each cell of the first plurality of cells corresponds to a state machine input/state pair; and~~

wherein the second code comprises fourth code to receive respective data associated with one or more of the first plurality of cells via an input device of the computing device, wherein the respective data is indicative of a next state to which the state machine is to transition when the state machine is in the state corresponding to the cell and when the input corresponding to the cell is a particular value.

20. (Original) A tangible medium according to claim 19, further comprising fifth code to display on the display device indications of the state transition data in appropriate cells of the first plurality of cells.

21. (Currently Amended) A tangible medium according to claim 19, wherein the first code comprises fifth code to display the matrix on ~~the~~ a display device ~~a matrix comprising the first plurality of cells, the matrix comprising~~ wherein the first dimension comprises at least one row of cells and the second dimension comprises a plurality of columns of cells, ~~wherein~~ such that each row of the at least one row corresponds to a state machine input, and wherein each column of the plurality of columns is associated with a state machine state.

22. (Currently Amended) A tangible medium according to claim 19, wherein the first code comprises fifth code to display the matrix on ~~the~~ a display device ~~a matrix comprising the first plurality of cells, the matrix comprising~~ wherein the first dimension comprises at least one column of cells and the second dimension comprises a plurality of rows of cells ~~and at least one column of cells, wherein~~ such that each row of the plurality of rows

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corresponds to a state machine state, and wherein each column of the at least one column is associated with a state machine input.

23.   (Previously Presented) A tangible medium according to claim 19, wherein the particular value is one of a logical one, a logical zero, a logical TRUE value or a logical FALSE value.

24.   (Previously Presented) A tangible medium according to claim 19, further comprising:

fifth code to receive data, via the input device, indicative of a plurality of state machine inputs; and

sixth code to determine a number of cells in the first plurality of cells based on the number of inputs.

25.   (Previously Presented) A tangible medium according to claim 24, further comprising:

seventh code to receive data, via the input device, indicative of a number of state machine states;

wherein the sixth code comprises code to determine the number of cells based on the number of state machine inputs and the number of state machine states.

26.   (Previously Presented) A tangible medium according to claim 19, further comprising:

fifth code to receive data, via the input device, data indicative of a number of state machine states; and

sixth code to determine a number of cells in the first plurality of cells based on the number of state machine states.

27.   (Original) A tangible medium according to claim 19, wherein the plurality of graphical elements comprises a second plurality of cells associated with the function block, wherein each cell of the second plurality of cells corresponds to a respective one of a plurality of outputs of the function block and a respective one of the plurality of states of the state machine;

sixth code to receive output configuration data associated with at least some of the second plurality of cells via the input device, wherein respective output configuration data associated with each cell of the at least some of the second plurality of cells includes data indicative of an output value of the output corresponding to the cell when the state machine is in the state corresponding to the cell; and

seventh code to store the output configuration data.

28.   (Previously Presented) A tangible medium according to claim 18, wherein the state machine inputs comprise a plurality of inputs, the tangible medium further comprising:

fourth code to receive data, via the input device, indicative of priorities associated with the plurality of state machine inputs; and

fifth code to store the data indicative of the priorities.

29.   (Previously Presented) A tangible medium according to claim 18, further comprising:

fourth code to receive data indicative of how to handle state machine inputs that have a BAD status; and

fifth code to store the data indicative of how to handle state machine inputs that have a BAD status.

30.   (Previously Presented) A tangible medium according to claim 18, further comprising:

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fourth code to receive data indicative of whether to ignore one or more, if any, of the state machine inputs; and

fifth code to store the data indicative of whether to ignore one or more, if any, of the state machine inputs.

31.   (Previously Presented) A tangible medium according to claim 18, wherein at least one state machine input is to be associated with at least one of a process control system, a simulation of a process control system, a safety system, or a simulation of a safety system.

32.   (Previously Presented) A tangible medium according to claim 18, wherein at least one state machine input is to be received from at least one other function block associated with the process plant.

33.   (Previously Presented) A tangible medium according to claim 18, wherein at least one state machine input is to be received from an operator interface.

34.   (Currently Amended) A method of implementing a state machine in a function block for use in controlling, or simulating control of, one or more field devices in a process plant, the method comprising:

providing a graphical user interface displayed by a display device, the graphical user interface including a plurality of graphical elements for configuring state machine transitions between a plurality of state machine states, the graphical elements ~~defining one or more state machine input/state pairs~~ comprising a first plurality of cells associated with the function block arranged in a matrix having a first dimension and a second dimension, wherein positions along the first dimension correspond to state machine states, and positions along the second dimension correspond to state machine inputs, such that cells in the first plurality of cells define input/state pairs corresponding to the position of the cells relative to the first and second

dimensions, wherein one or more state machine inputs are indicative of one or more conditions within the process plant;

receiving state transition data identifying a state machine next state associated with at least one of the ~~graphical elements~~first plurality of cells via an interface input associated with the graphical user interface;

storing the state transition data on a first computer readable medium associated with the function block;

receiving at least one state machine input;

determining a state machine next state based on the at least one input, a current state, and the state transition data stored on the first computer readable medium;

setting the current state of the state machine to the state machine next state; and

providing at least one function block output for use in controlling the one or more field devices to at least a second other function block, wherein the at least one function block output is based on the current state of the state machine.

35. (Previously Presented) A method according to claim 34, wherein the one or more state machine inputs comprises a plurality of state machine inputs;

wherein determining the state machine next state is further based on priorities associated with the plurality of state machine inputs.

36. (Currently Amended) A method according to claim 35, wherein the state machine next state is based on an order determined by the priorities associated with the plurality of state machine inputs.

37. (Previously Presented) A method according to claim 34, further comprising:

determining whether a state transition is to occur based on the received at least one state machine input and the state transition data stored on the first computer readable medium;

wherein determining the next state comprises determining the next state if a state transition is to occur; and

wherein setting the current state of the state machine to the next state comprises setting the current state of the state machine to the next state if a state transition is to occur.

38.   (Previously Presented) A method according to claim 34, wherein determining the next state comprises determining whether one or more, of the received at least one state machine inputs is a particular value.

39.   (Previously Presented) A method according to claim 38, wherein determining the next state further comprises determining whether one or more, of the one or more of the received at least one state machine inputs that are a particular value and that also correspond to state changes based on the state transition data stored on the first computer readable medium.

40.   (Currently Amended) A method according to claim 39, further comprising selecting one of the one or more, of the received at least one inputs that are a particular value and that correspond to state changes.

41.   (Currently Amended) A method according to claim 40, wherein the at least one input comprises a plurality of inputs;

wherein selecting one of the one or more, of the received at least one inputs that are a particular value and that correspond to state changes comprises selecting one of the one or

more of the received at least one inputs that are a particular value based on priorities associated with the plurality of inputs.

42. (Currently Amended) A method according to claim 41, wherein selecting one of the one or more, of the received at least one inputs that are a particular value and that correspond to state changes comprises selecting one of the one or more of the received at least one inputs that are a particular value based on an order associated with the plurality of inputs.

43. (Currently Amended) A method according to claim 34, wherein determining the next state comprises determining one or more, of the received at least one inputs associated with potential state changes from the current state based on the state transition data stored on the first computer readable medium.

44. (Currently Amended) A method according to claim 43, wherein determining the next state further comprises determining one or more, of the one or more of the received at least one inputs associated with potential state changes from the current state that are a particular value.

45. (Previously Presented) A method according to claim 34, wherein providing the at least one function block output comprises providing a plurality of function block outputs.

46. (Original) A method according to claim 45, wherein each of at least some of the plurality of function block outputs are indicative of whether the current state of the state machine corresponds to a respective one of a plurality of possible states of the state machine.

47. (Original) A method according to claim 45, wherein providing the plurality of function block outputs comprises:

retrieving, based on at least the current state, data indicative of appropriate values for at least some of the plurality of state machine function block outputs from an output configuration database; and

setting the at least some of the plurality of function block outputs to the appropriate values.

48.	(Original) A method according to claim 45, wherein providing the plurality of function block outputs comprises providing one function block output indicative of the current state of the state machine.

49.	(Currently Amended) A method according to claim 34, wherein the at least one function block output comprises a function block output that is indicative of the current state of the state machine.

50.	(Original) A method according to claim 34, further comprising:

receiving an input indicative of whether the state machine function block is to be disabled; and

if the input indicative of whether the state machine function block is to be disabled indicates that the state machine function block is to be disabled, setting the current state of the state machine to a disabled state.

51.	(Currently Amended) A method according to claim 50, further comprising:

receiving an input indicative of whether the state machine function block is to be forced to an initial state; and

if the input indicative of whether the state machine function block is to be forced to the initial state indicates that the state machine function block should be forced to the initial state, setting the current state of the state machine to the initial state;

wherein the input indicative of whether the state machine function block is to be enabled and the input indicative of whether the state machine function block is to be forced to the initial state comprise a single input.

52.   (Original) A method according to claim 34, further comprising:

receiving an input indicative of whether the state machine function block is to forced to an initial state; and

if the input indicative of whether the state machine function block is to be forced to the initial state indicates that the state machine function block should be forced to the initial state, setting the current state of the state machine to the initial state.

53.   (Previously Presented) A method according to claim 34, wherein receiving at least one state machine input comprises receiving at least one signal associated with at least one of a process control system, a simulation of a process control system, a safety system, and a simulation of a safety system.

54.   (Previously Presented) A method according to claim 34, wherein the at least one state machine input is to be received from at least one other function block associated with the process plant.

55.   (Previously Presented) A method according to claim 34, wherein the at least one state machine input is to be received from an operator interface.

56.   (Original) A method according to claim 34, wherein providing the at least one function block output comprises providing the at least one function block output to a portion

of a process control system, wherein the portion of the process control system controls the one or more field devices based, at least in part, on the at least one function block output.

57.   (Original) A method according to claim 34, wherein providing the at least one function block output comprises providing the at least one function block output to a portion of a safety system, wherein the portion of the safety system controls the one or more field devices based, at least in part, on the at least one function block output.

58.-79. Canceled.